5-2018

Crystal & Gem: A Magazine Concept for the Millennial Audience

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Crystal
gem

Dear reader,

Welcome to the first issue of Crystal & Gem, a new quarterly publication focusing on the glittering minerals that give our magazine its namesake.

You've seen crystals used as décor in aesthetically pleasing interior design on Pinterest and in the names of some of your favorite beauty products. Fashion and lifestyle magazines flaunt the resurgence in popularity of "healing crystals" and give guides on which crystals have the best energy. You've seen gems glitter in jewelry commercials and walked past well-stocked glass cases filled with shining stones at your local mall. But what really are these things? How did they form throughout history, and how has history shaped what we believe about these pretty little rocks?

Crystal & Gem is a new magazine designed and written to answer those questions. It's a publication for women, by women. So often people seem to forget that it's possible for women to be interested in both science and style, in mythology and makeup. Like the crystals and gemstones covered in these pages, we are multi-faceted individuals.

Our inaugural issue offers an introduction to what crystals and gems are, and how they form. Each issue will feature a guide breaking down the facts of a few select gems, as well as articles we believe you will find interesting.

On behalf of Crystal & Gem, thank you for picking up our first issue.

Sophie Ford

Editor

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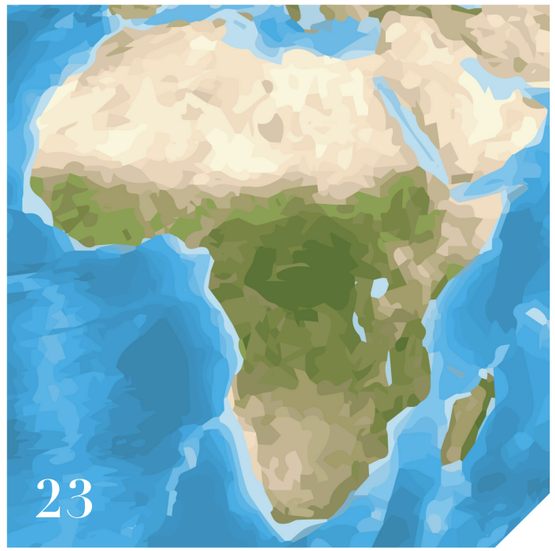

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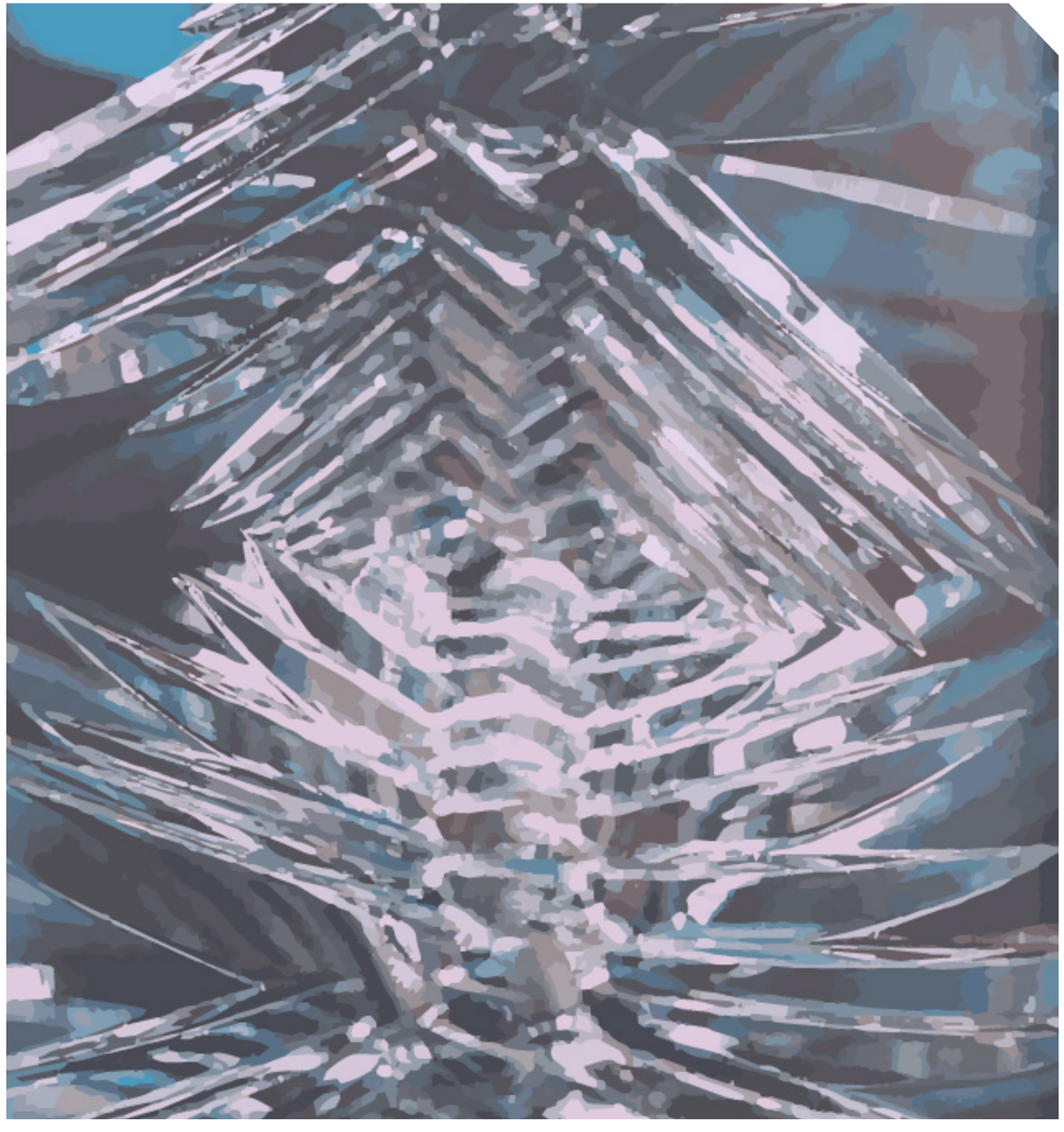
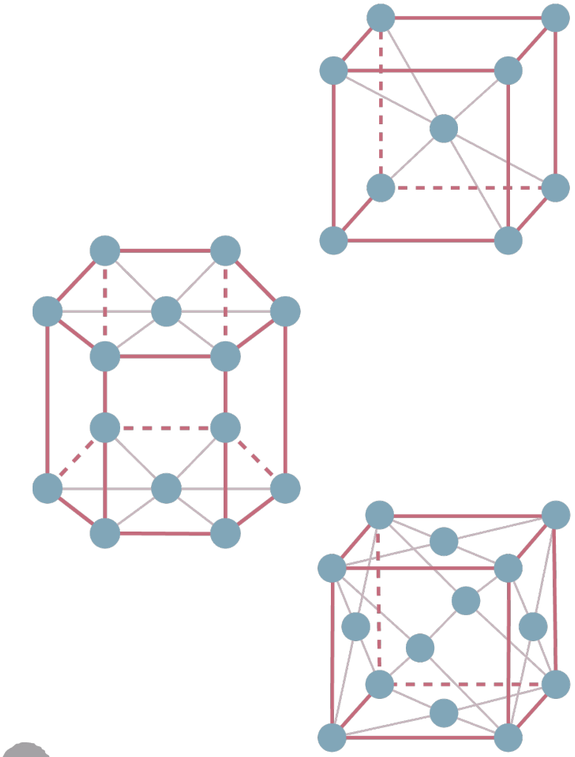
What are Crystals & Gemstones?

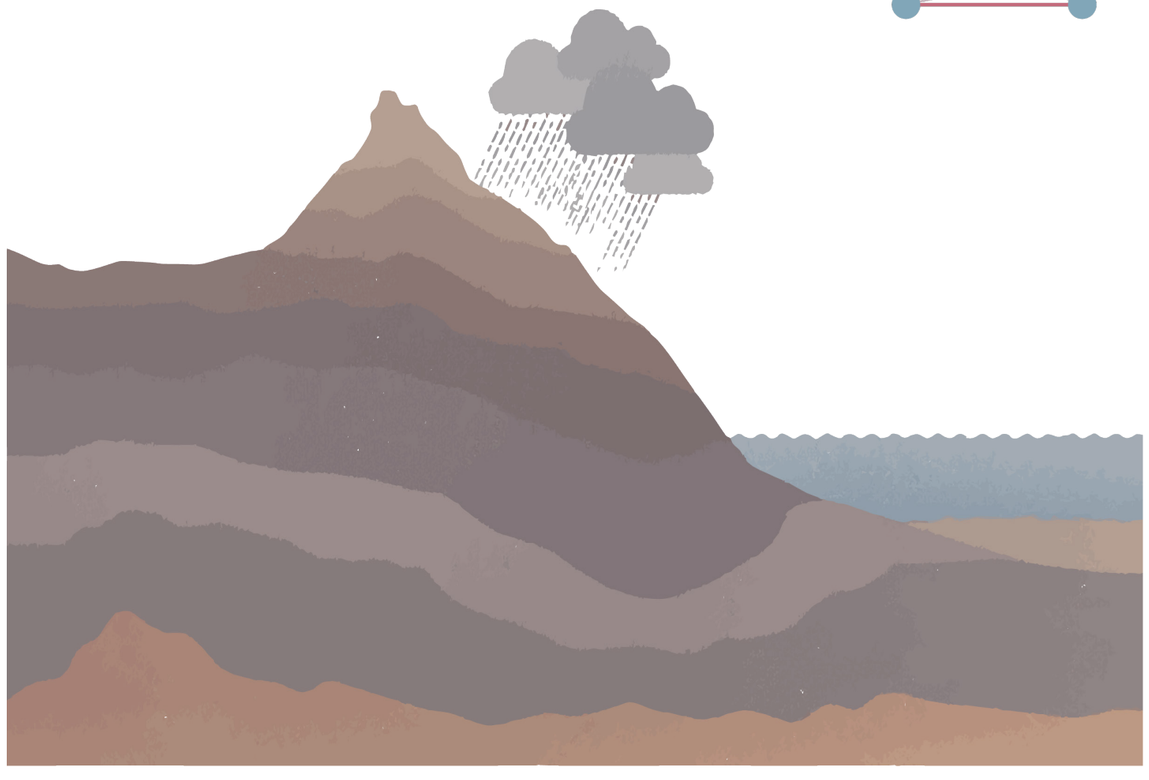


The Formation of Crystals

All crystals and gemstones are made of minerals. Minerals are the material that make up the rocks on Earth. They are made up of chemical compounds, usually containing two or more different chemical elements. Minerals have a crystalline structure, meaning the atoms inside a mineral are arranged in a repeating three-dimensional pattern. The way these atoms repeat determines the overall shape of the crystal. Different minerals can have similar structural patterns but be made of different atoms. This is why some crystals appear to be similar in shape but have different colors.

Crystals are often formed through a complicated metamorphic process known as the rock cycle. These minerals begin their lives as igneous rock (rock that has formed from magma). Over time, these rocks are altered by being re-melted, eroded or undergoing metamorphosis caused by intense heat and pressure. This heat and pressure usually occurs deep in the earth, but can also occur when meteorites strike the earth. You can read more about meteorite-formed gemstones on page 13.





Difference Between Crystals & Gems

Minerals, crystals and gems: It's easy to get the different terms mixed up, especially when the materials aren't all so different from one another. Just like all crystals and gemstones are made of minerals, gemstones usually begin their life as crystals.

They become gemstones through human intervention, and not through any sort of environmental process. We decide which crystals are precious enough to polish or cut for our own personal decoration. Some gemstones are not cut from minerals, and instead are sourced from nature. These are known as organic gems, and you can read more about them on page 21.

Gemstones have four main qualities which make them more or less desirable to a consumer:

Beauty

Compared to the other qualities, beauty is quite a subjective feature. Beauty is brought out of a rough gemstone through the act of cutting the gem. It's up to the gem cutter to find a "diamond in the rough" and transform a lumpy, naturally formed crystal into something new. The way the light plays off the color of a gem after being cut can substantially increase its beauty.

Rarity

Rarity is another factor to consider in terms of desirability, as the scarcer something is, the more people usually want to get their hands on it. Some crystals such as red beryl are so rare they are only found in one location on the entire planet. Surprisingly enough, diamonds are not as rare as the cost would suggest, but a false scarcity is created by restriction of diamond sources by big gem companies such as DeBeer's.

Durability

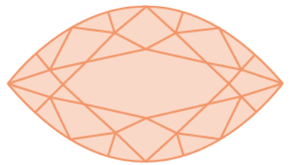
Durability is an important factor in gemstones, especially for those cut with the intention of being worn as personal adornment in jewelry. Gems that are resistant to chipping and scratching, as well as resistant to losing their color from the UV rays of the sun, are considered more durable and thus more valuable. You can read more about the factors that determine durability on page 9.

Value

Value can be determined by the "four C's": color, clarity, cut and carats. The more intense a color appears in a gem, the more value it may have. Clarity refers to if there are flaws or not in the gemstone. The cut is the quality of which the gem was skillfully cut away from its crystal form and the carat is the size or weight of the stone. Of course, it's always up to the individual to decide which gems they like the most.

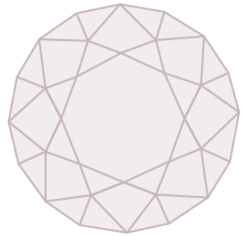
How gemstones are cut

Throughout history, gemstones have been cut for a variety of reasons. Today, gems are cut to enhance their beauty by increasing the shine or enhancing the color of a stone. In history, gems were cut to increase their magical power, as throughout time some have believed gemstones hold mystical powers. You can read more about the ancient myth of gems on page 27 and more about current mystical beliefs on page 17. There are several different types of gemstone cuts:

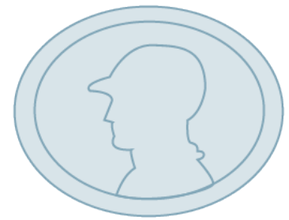


A **fancy cut** is any gemstone cut with an unusual outline. These cuts are shaped like hearts, pendants, kites, scissors, and marquise (an oval ending in points.) Any other free-form cuts are also fancy cuts.

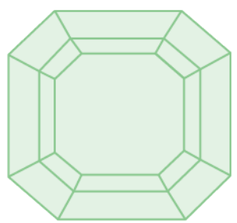
A **mixed cut** combines brilliant cuts and step cuts. This cut utilizes the benefits of multiple cut styles to optimize both the brilliance and the color of the stone.



Brilliant cuts are made to maximize the brilliance (light reflected from the interior of a gem). They are also used on colored stones to conceal imperfections on the stone. These cuts have lots of small, usually triangular shaped facets.

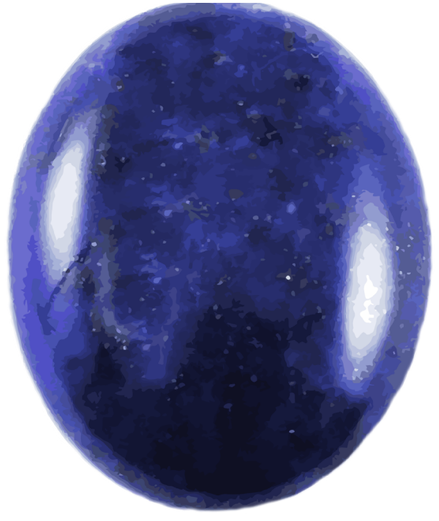


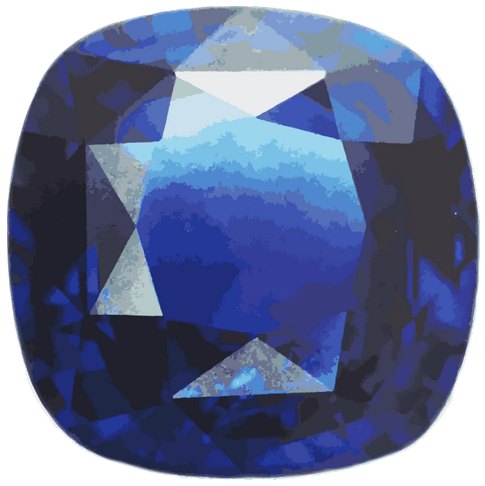
Carving takes an immense amount of skill developed over years of workmanship. Carved gems are cut into three-dimensional figures such as portrait cameos and even figurines. Gemstone carving is a skill that has existed for around 2,000 years.



Step cuts enhance the color of a stone, but are not as sparkly as the brilliant cuts. These cuts have broader planes that resemble steps, and much fewer facets than the brilliant cut. Brittle stones are often cut in a step, as it removes the sharp brittle corners that are likely to otherwise break.

Cabochon cut gems appear more like smoothed-out stones than multi-faceted gemstones. They are cut flat on the back and then polished round and smooth on top. This cut emphasizes certain visual characteristics of a stone like cat's eyes, or a unique pattern. Gems can also be polished into a flat slab or round beads





Gemstone Guidebook

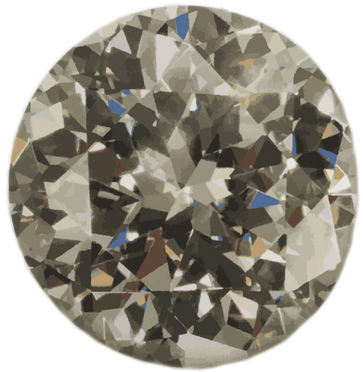
If you're new to the world of gemstones, it's easy to quickly be overwhelmed by the sheer number and variety found in these pretty sparkling rocks. It's hard to find a consensus on exactly how many varieties there are out there of crystals and gems, but many agree that the number is in at least the hundreds. To make things a little easier, we're including this guide in every edition of our magazine featuring a handful of stones so you can dive into the ocean of gemstone knowledge without drowning. For our inaugural issue, we've chosen some of the more popular ones you've probably already heard a thing or two about, but stay tuned for some more obscure selections as time goes on.

Diamonds are Forever

You've heard they're a girl's best friend, but what else is there to know about what's arguably the world's most famous and sought-after stone? Diamonds are the hardest mineral on Earth, formed out of pure carbon crystallized 95 miles down deep in the mantle of the planet. They're so sturdy that their given name comes from the Greek word "adamas," which means "unconquerable."

Diamonds are commonly found in volcanic rock after magma carries the mineral up to the surface from below. However, thanks to their incredibly hardy nature, diamonds are impervious to weathering and have been carried all over the planet by rivers, oceans and glaciers. You can find diamonds in gravel at the bottom of streams and mixed in with sandy beaches.

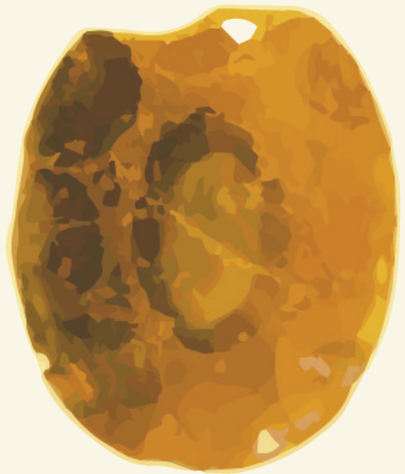
While the crystal-clear sparkling finish is what comes to mind when most of us think of diamonds, the stone actually exists in a variety of colors. Hues can range from colorless, to yellow, to blue to the very rare orange and red diamonds. More recently, technological advances allow diamonds to be treated with heat and radiation to mimic these natural colorations, but these diamonds are not considered as valuable as those colorations found in nature.



Diamonds have not been without their fair share of scandal in the past few decades. The infamous term "blood diamond" was coined in referral to diamonds that are mined in war zones and sold to finance war activities. Diamond mining, even "conflict-free," is also very detrimental to the environment. Read more in-depth about the ethical and environmental impacts of mining later in this issue on page 23. Fortunately, synthetic diamonds grown in labs are increasingly more available, and they're cheaper too!

What is Durability?

Durability is an important factor when it comes to gemstones. The more durable a gemstone is, the more resilient it is and the less likely it is to wear down or break apart. There are specific properties that determine how durable a mineral is. The first is hardness. The harder it is to scratch, the more suited it is for more frequent wear and tear. In frequently-worn jewelry, it's always better to use a more durable gem. Specific gravity refers to how dense a gemstone is and helps gem experts identify stones. Cleavage is a very important factor in minerals, as it determines the lines where minerals will be more likely to break. When gems are cut from rough minerals, the gemcutter always has to keep cleavage in mind. Finally, tenacity refers to how strong the bond between the atoms inside the gemstones is. Weaker bonds make brittle gemstones that are more likely to chip. Gemstones can have high hardness and low tenacity. For example, diamonds are very hard but are also quite brittle.



Corundum Conundrum

Until the 18th century, sapphires and rubies were considered to be two separate rocks. However, it turns out that both these gems are different color variations of the same exact mineral, corundum. Today, the name "ruby" is given to the dark red variety of corundum, and the name "sapphire" is given to most other color varieties of the mineral (save for a specific pink and orange-tinged stone called "padparadscha"). Corundum is the hardest mineral found in nature besides diamond, which is one of the reasons it has been so commonly used in jewelry throughout history.

When we think of sapphires, the color that traditionally pops into our minds is a rich blue color. These blue varieties are the most valuable out of the sapphires, with other colors referred to as "fancy sapphires." Blue sapphires are commonly cut in two different ways. The brilliant cut contains many facets to emphasize its color. When a sapphire crystal contains thin needles of another mineral known as "rutile," a star pattern forms when the sapphire is cut in a domed cabochon shape.

Rubies get their name from the Latin "ruber" which means "red." Rubies are usually quite small, as the presence of the metal chromium (which gives the ruby its red hue) also prevents the ruby from growing larger. Because of this, rubies can be more expensive than diamonds of the same size. Like blue sapphires, rubies with rutile needles are cut to emphasize their star pattern.

Sapphires and rubies are most commonly found in alluvial deposits (deposits left by water such as in river beds). High concentrations of the corundum mineral are quite rare though, and today a majority of the sapphires and rubies found on the market are synthetically recreated in lab settings.

Seeing Stars

Some gemstones cut " en cabochon," or in a domed fashion, reflect light in a beautiful star pattern. Gems with this pattern exhibit a property known as "chatoyancy." Chatoyancy happens when microscopic amounts of other minerals grow inside a gem as the gemstone first forms. One mineral that commonly causes chatoyancy is rutile. This mineral is sometimes found in corundum crystals, the source of sapphires and rubies. In order for the star pattern to emerge, the gem must be expertly cut in the correct orientation for the light to reflect off the mineral inclusions. These stones are cut in a dome shape so the peak of the dome aligns with the center of the star. Cut at the wrong orientation, the star pattern will never be visible within the stone.

Stone of the Heavens

Lapis lazuli has been a staple in human decoration for millennia. Tracing back to more than 3,000 B.C., the blue stone has been used as personal decoration in the form of polished beads and cameos, as decoration carved into elaborate shapes and even in powder form as a pigment. These pigments were used to create paint.

Lapis lazuli is actually composed of many other minerals, including the mineral lazurite which gives lapis its deep blue hue. Due to its multi-mineral makeup, lapis lazuli is also often streaked with white calcite and flecked with golden-yellow pyrite. These golden flecks imitate shining stars in a deep blue night sky, which is probably where the stone got its name. The Persian word "lazhuward" means blue, and the Arabic word "lazaward" means heaven or sky.

Lapis lazuli is most commonly found in the Middle East in countries such as Afghanistan and Pakistan. In the 1990's, a large amount of lapis was unearthed from a mine in Badakshan. The stone can also be found in other places around the world though, including lighter blue lapis lazuli found in mines in Chile. Other deposits can be found in Italy and even in California and Colorado in the United States.

Lazurite is not to be confused with lazulite, a stone both similar in name and appearance. Lazulite gets its name from the German word "lazurstein," or "blue stone." Lazulite, however, is more of a sky-blue or bluish white compared to the rich deep tones of lapis lazuli. It also commonly occurs in a completely different part of the world, found primarily in European areas such as Sweden and Switzerland, as well as localities in North America including New England.

The Standard of Ur

The Standard of Ur is estimated to be around 4,500 years old. Found in what is now present-day Iraq, this artwork was created in what was once known as the civilization of "Sumer." Sumerians occupied southern Mesopotamia thousands of years ago in what is believed to be the oldest known civilization on earth.

The Standard of Ur was created at a time of great riches, when native elements such as gold and silver, as well as many precious stones, were used in countless works of art and function. The exact function of the standard is unknown, but possible theories include use as a "standard" mounted on a pole during parades, or function as the soundbox of some ancient musical instrument.

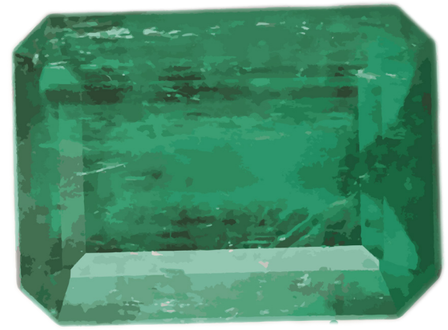
The Standard has been heavily restored due to damage accrued over millennia. It features scenes of war on one side and peace on the other, and now resides in the British Museum.

Brittle Beautiful Beryl

The Emerald is perhaps one of the most famous and most easily recognized gemstones out there. Humanity has prized the rich green stone for millennia. Evidence suggests that emeralds were mined as far back in time as 1300 BC. The ancient Egyptians held emeralds in high esteem, viewing the stones as a symbol of fertility and life.

Rich deposits of emeralds were found in Columbia during the Spanish conquest of South America. These deposits were exploited then, and are still producing emeralds to this day. The stone has also been found in Austria, Norway, Australia, several countries in Africa and even North Carolina in the United States. In 1937, scientists discovered how to synthesize artificial emeralds that appear very similar to emeralds, if not a little too perfect.

Despite its high esteem, emeralds are actually extremely brittle gems. Found in nature, emeralds are often flawed with inclusions and cracks. Due to its brittle nature, a specific kind of cut known as the "emerald cut" was developed to minimize loss. In addition, cracks on the stone are often filled in and oiled to distract from flaws. Particularly flawed specimens are polished into beads or carved into cameos and intaglios when they cannot be cut in a traditional gem style.



The well-known and equally desired emerald is actually one color variation of the mineral known as "beryl." Beryl in its purest form is colorless, however traces of other minerals within beryl create a wide variety of colorful forms. Chromium in beryl is what gives emeralds their green color. Other beryl variations including morganite and red beryl are hued with pink, orange or red thanks to the presence of manganese. Traces of iron give beryl either a bluish hue creating aquamarine, or a yellow hue creating heliodor.

Get your Greens

Throughout history, many gemstones were believed to have mystical healing or more scientific medicinal properties. While almost always proven false today, these assumptions were standard procedure at one time or another.

If struck ill with dysentery, it was thought that holding an emerald in the mouth would work as a viable cure. The green stone was also worn to prevent epileptic seizures. Women wore the stone during childbirth and the stone also supposedly drove away evil spirits. In the 17th century, a doctor of the Holy Roman Emperor suggested people wear an amulet with an emerald in it to stop anxiety, bring down fevers and stem bleeding.

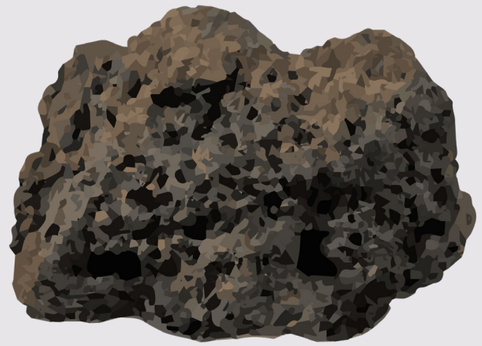
Out of this world

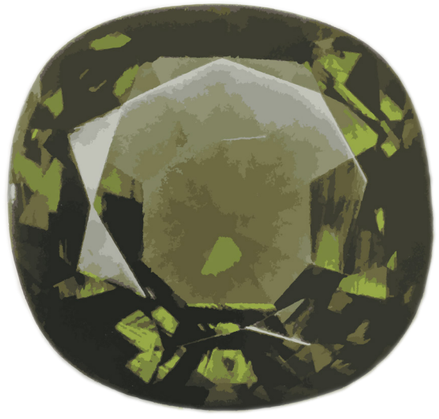
Earth is a tiny dot floating around in a much bigger universe. While life off the surface of our little green and blue planet is still very much up for debate, there's plenty of evidence that gemstones exist in other places in outer space.

Some gems glitter in far off planets and stars, while others come crashing down to Earth's surface on the backs of meteors. No matter where they are or how they get here, these gemstones have fascinated scientists and collectors for years .

Making an impact

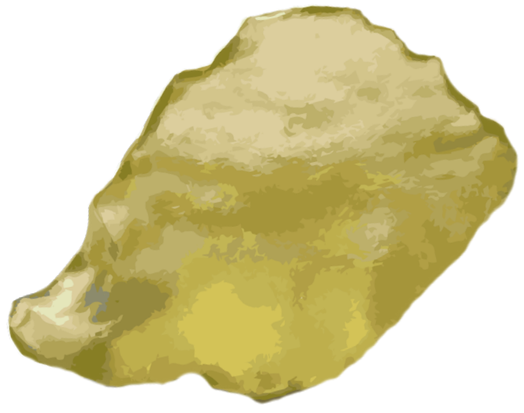
We've all seen the disaster movies where a meteor threatens to strike earth, and only a ragtag group of scientists can save the planet from massive destruction. In reality, most meteorites that strike the surface are small and slow enough that they only leave shallow dents in the earth known as impact pits. However, massive meteorites have hit the earth in its long history, leaving massive, building-sized craters known as "astroblemes." The impact that forms these craters dramatically deforms the earth around it. The heat and pressure of the impact physically alters the rocks around it, creating new minerals called "impactites." Luckily for us, the last major impact of this magnitude is believed to have happened more than 3,000 years ago.





Moldavite:

The mossy-green mineral known as moldavite formed more than 15 million years ago in modern day Bavaria. This mineral is an impactite, meaning it formed when a large meteorite struck the ground in the region. In this particular case, local sandstone was struck and melted, and flung miles into the air. As it fell back to earth, the melted crystal cooled into the green glass-like substance as it is known today. This specific impactite is found locally in the areas of southern Germany and the Czech Republic.



Libyan Desert Glass:

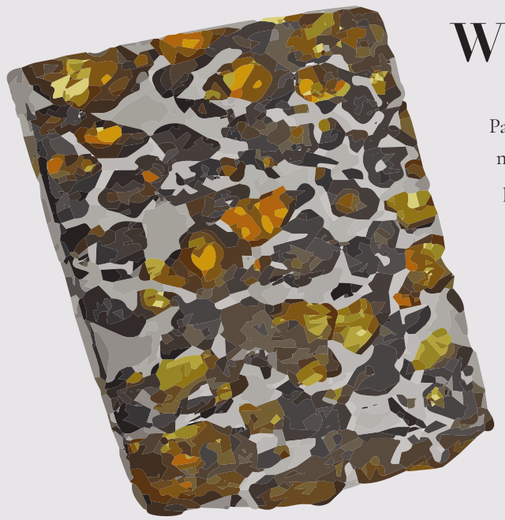
Considered one of the most beautiful examples of impactites on earth, Libyan Desert Glass was held in high regard by the ancient Egyptians. A pendant found in the famed burial tomb of King Tutankhamen featured a large desert glass scarab as the dominant gemstone. While scientists have yet to discover the impact crater site of this mineral, they have been able to estimate the impact date at around 29 million years ago.

Raining Crystals:

Located near the Orion nebula, the young star HOPS-68 is host to a steady rainfall of olivine crystals. Scientists believe these crystals may be forming thanks to the super-hot blasts of gas being generated by the burgeoning star. Much like impactites form on earth, these crystals may cook near the surface of the star before travelling to the clouds above where they cool to form the glittering falling green crystals. At more than a thousand light-years away though, gem enthusiasts won't be collecting these minerals any time soon.

Gems on the moon:

Scientists weren't looking for the pretty-in-pink gemstone when they spotted spinel on the surface of the moon. Instead, they were mapping the location of olivine crystals, the green mineral well-known to exist in outer space. They were in for a shock when they noticed the pink mineral in a basin on the far side of the moon. Scientists aren't sure exactly how the spinel ended up focused in this spot on the moon, but they theorize that the massive impact which formed the moon basin may have dredged up these gems from below the surface.



What are pallasites?

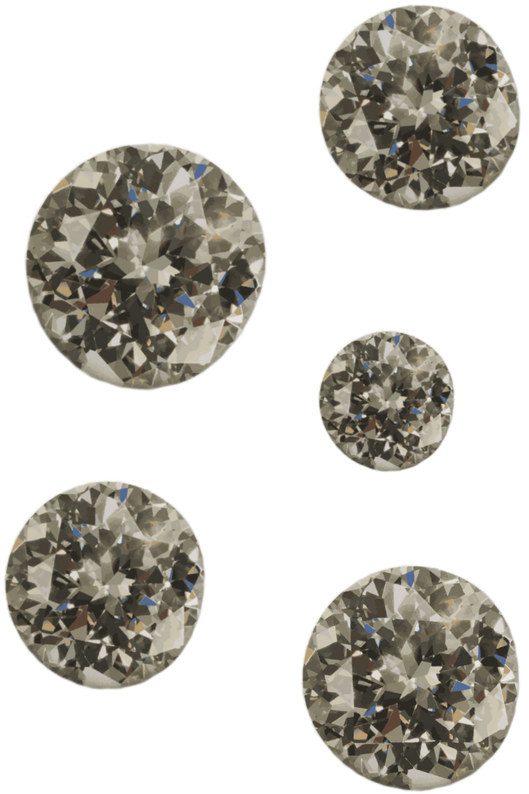
Pallasites are stony-iron meteorites, extraterrestrial chunks of iron and nickel that once formed the core of planets or asteroids. What makes pallasites special are the yellow-green olivine crystals that interlace the meteorites. Some of the crystals found in these meteorites are gem-quality peridot, meaning they can be cut and faceted into sparkling green gems. Unfortunately, the stress placed on these meteorites as they travel through space and the Earth's atmosphere causes many of the olivine crystals to crack. However, even these cracked minerals are viewed as valuable within the alternative medicine community. These people believe these gems are imbued with special healing energy.

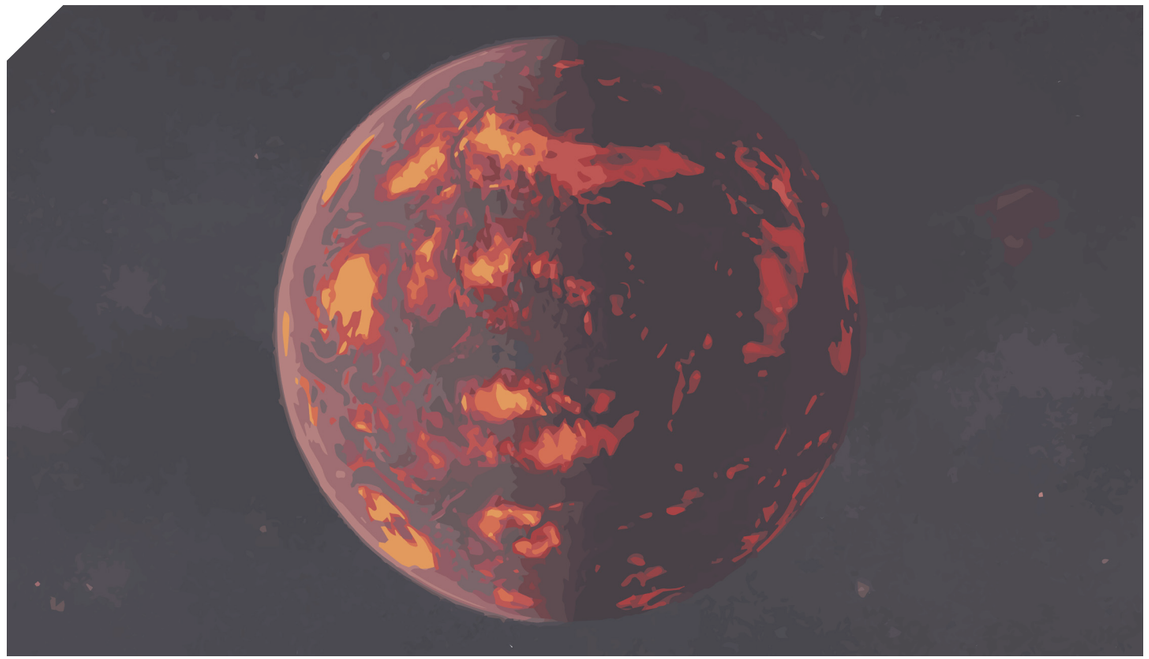
Popigai Diamonds:

The Popigai diamond site in Siberia is perhaps one of the most misunderstood impact sites on earth. Countless news stories have reported the crater as a massive dent in the earth filled with masses of beautiful, gem-quality diamonds. In fact, most of the diamonds formed in the impact nearly 35 million years ago are tiny, just a few millimeters across. These impactite diamonds would be most suitable for industrial practices as abrasive tools. However, the increased availability of synthetic diamond compared with the harsh, difficult-to-reach location of the crater in Siberia, has left the site mostly untouched.

Diamond planet:

In 2004, scientists discovered a planet orbiting a star about 40 light years (2,351 trillion miles) away. For a period of time, scientists believed this planet was mostly made up of carbon in the form of glittering diamonds. Unfortunately, more recent research into the planet and its host star have revealed that the planet's carbon content is probably much lower. The "diamond planet" as it was known for years may very well have lost its luster.





Welcome to the New Age

Within the last several years, crystal healing has exploded into the mainstream. Once an unusual practice reserved for the new age set, women are coming out in droves to exalt the benefits of their favorite cleansing stones. While there's no scientific or medical proof that crystal cleansing has any measurable benefit, it has certainly become somewhat of a phenomenon.

So why crystals, and why now? Many in the crystal community believe that the tumultuous, intense and at times overwhelming nature of the modern world has millennials scrambling for some sense of serenity. The idea that touching a specific crystal to part of the body could heal a person's energy is an appealing fix to the generation of self-care.

Then there's the trend factor. Celebrities as famous as Adele and Victoria Beckham have described how integral crystals are to their professional routines. Fashion magazines such as Allure, Nylon and Vogue have explored the benefits of the new age within their pages. Storefronts on Etsy tout pendants and earrings as a convenient way to keep preferred crystals nearby at all times.

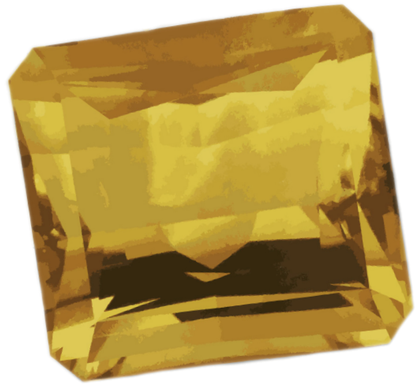
Crystals have also begun to permeate the beauty industry. Skincare brand "Therapie" boasts gem-infused products like gem-infused detoxifying bath salts. Aquarian Soul offers an entire range of skin-care options such as gemstone infused body oils and face rollers made from various stones. A salon in Santa Monica, California, offers "crystal combing" treatments, utilizing amethyst, rose, clear quartz and black obsidian to spiritually cleanse the client.

Popular Healing Stones

There are hundreds of crystals and gems in the world to pick from, but fans of the new age movement tend to have their favorites:

Rose Quartz is associated with love. Whether it be a healer of heartaches or the key to learning to love oneself, this crystal is a famous one. It doesn't hurt that the rosy tone of this stone has a lot in common with the ever-popular millennial pink.

Citrine is a crystal for the go-getters and goal-setters. The orange-yellow mineral is thought to be energizing and imbued with powerful solar energy. Individuals wear this crystal in order to attract power. Easy to see why this one is so appealing to the women taking aim at the glass ceiling.



Fluorite comes in a myriad of semi-transparent colors, including purple, blue, green, yellow and pink. This crystal is known as a "protector," protecting the wearer from surrounding bad energies.

Amethyst is about as popular for its aesthetics as it is for its supposed healing capabilities. This pretty-in-purple crystal is used for balance, clearing the mind and reducing stress. It's no wonder that it's a staple in any meditative crystal collection.

The sun & the moon

People love contrast. From yin and yang to push and pull, black and white to good and evil, there's something dynamic about two opposites put next to each other. Perhaps no two gems demonstrate this contrast more than the sunstone and moonstone.

Like the name suggests, sunstone is a red-orange gemstone. The stone gets its vibrant fiery color from inclusions of iron oxide or copper clustered within the stone. In fact, it's hard to tell at a simple glance, but sunstone is actually a transparent gem between these glittering orange inclusions. This phenomenon is known as "aventurescence." Throughout history, sunstone has been associated with health, physical energy, passion and courage.

Sunstones are usually altered by humans in two different ways. One way the stone is altered is by using a step-cut to enhance the blazing color. In rare instances, sunstone can even exhibit chatoyancy (described on page 10), which creates a star or cat's eye pattern on the polished gem surface. In these circumstances, the stone is polished rather than cut to allow the light to dance off the interesting inclusions created by the chatoyancy effect.

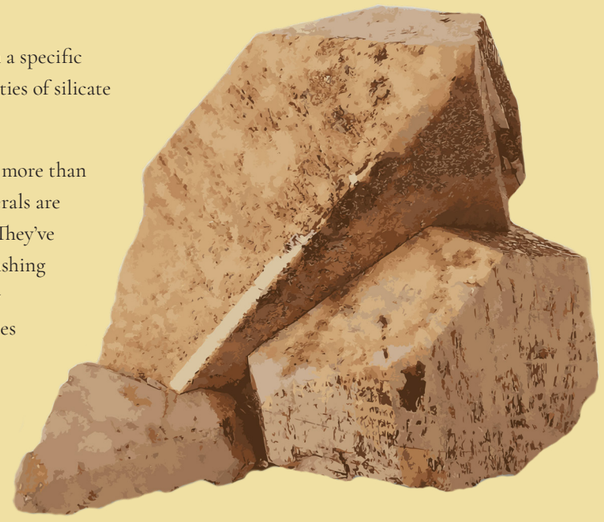
Reminiscent of its name, moonstone has a bluish-white sheen. The blue sheen comes from layers of albite, a bluish mineral, layered within the stone. Light reflects off these layers creating a unique iridescence. Moonstone is often cut en cabochon to emphasize this shine known as "schiller," but the stone is also sometimes cut into carved portrait cameos or other sculptures.

Moonstones have a great mythological history around the world. Ancient Greeks and Romans associated the moonstone with their own lunar gods. The Greeks gave the stone the name "Aphroselene," a merge between the goddess of love, Aphrodite, and the goddess of the moon, Selene. The Romans believed the stone to have been born out of solidified rays of the moon beaming down to Earth. In India, it was believed that if lovers held moonstones in their mouths during the full moon, they would be able to see their futures.

What are Feldspars?

Whereas many of the commonly known gemstones come from a specific mineral, both sunstone and moonstone come from a few varieties of silicate minerals known as feldspars.

Silicates makeup up for around 25 percent of all minerals and more than 40 percent of the most common minerals. These kinds of minerals are found abundantly in the earth, and are also extra-terrestrial! They've been found on the moon and in meteorites that have come crashing down to Earth. Every silicate contains silicon, which is a shiny metal resembling pencil lead, and oxygen. Feldspars are silicates found in most igneous rocks (rocks formed from magma). They can be broken down further into even more specific groups based on crystal and chemical structure. Two of these groups in which sunstone and moonstone are often found are oligoclase and orthoclase.



Organic Gemstones

While most of the gems featured in the pages of this magazine are derived from rocks in the Earth's surface, there are several fine gems that once existed as living things. These are known as organic gems.

Despite their alternative origin, these gemstones may have things in common with their inorganic counterparts. Many organic gems contain a variety of minerals and some even have crystalline structures. Like mentioned earlier in this issue, objects are considered gemstones solely because humans decided which materials on earth are precious enough to be classified as such. As a result of this, it is not technically required for a gemstone to be made out of a traditional mineral material to earn its "gemstone" category.

Despite having different origins to their inorganic counterparts, organic gemstones are still judged by the same characteristics and criteria. As mentioned before, some of these criteria include beauty, rarity and durability.

Organic gemstones have been used for a variety of purposes by humans as far back as the Upper Paleolithic Period, which was 40,000 to 60,000 years ago. During this time period, organic materials such as ivory and bone were carved, most likely for functional purposes rather than decorative. It wasn't until the Mesolithic period, beginning around 10,000 years ago, when humans first began utilizing organic gemstones as decoration.

Organic gemstones were most likely more popular options throughout prehistoric and ancient times thanks to their more easily workable nature. Whereas inorganic minerals are often very hard, requiring sophisticated tool work to manipulate, organic gems are generally softer in their makeup.

Pearl:

Whereas some minerals and gems have prehistoric origins, Pearls are a gemstone that are still being naturally produced to this day. A prized possession to people, pearls begin their existence in response to irritation on behalf of their shelled hosts. When a foreign body enters the mollusk or oyster, the shellfish begins to secrete a substance called aragonite onto the invader in order to protect the soft interior. These layers build up and a pearl is created. Pearls can be found in many colors and shapes, although the variety most often sought after is the rounded ivory-white stone. Pearls have been harvested to use in personal adornment for thousands of years. In Japan, up to 2,000 years ago hunters dived down to collect pearls without the help of breathing equipment. Today, pearls are often cultivated in large freshwater and seawater farming operations.

Amber:

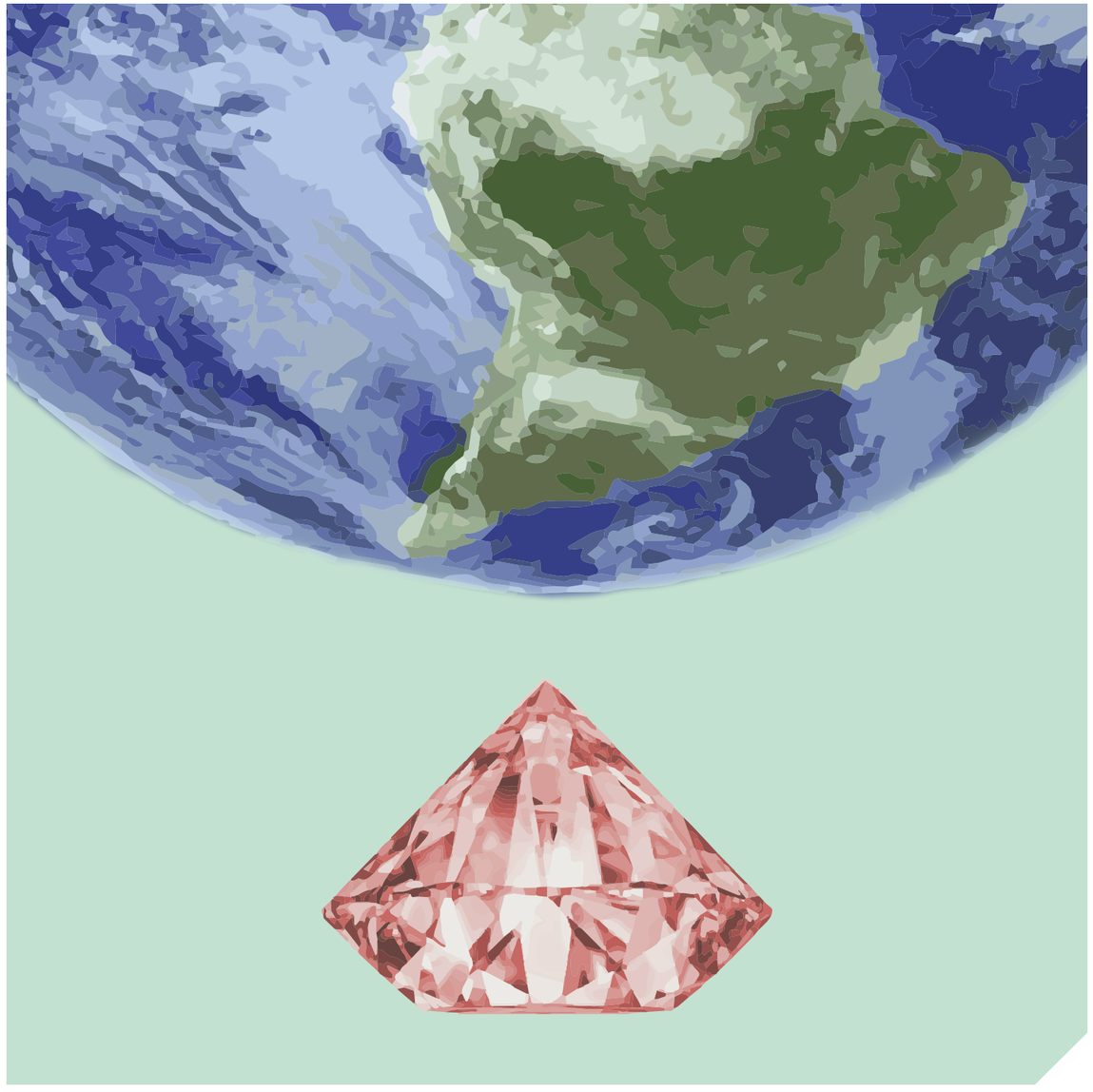
Amber is created from fossilized pine tree resin, primarily found along the Baltic coast. Amber can be anywhere from 25 to 60 million years old. It often acts as a time capsule, preserving plants and insects from a time long before people walked the earth. The ancient Greek philosopher Phales observed that amber created a static charge when rubbed, and our word for "electricity" comes from the Greek name for amber, "electrum," thanks to this. Humans have been using amber for decoration and adornment since ancient times. Amber beads have been found on necklaces from the archaic Greek period (800 – 480 BC). One of the eight wonders of the world, the Amber Room in Russia, was adorned in carved amber paneling from floor to ceiling. The original panels were unfortunately lost after Nazis stole them during WWII and consequently destroyed when a fire consumed the castle where they were stored.

Jet:

Technically a type of coal, jet is more commonly used for decorative purposes than fires, although it is readily flammable. Unlike other coals which form on land from coalified plant matter, jet is more specifically found in rocks with marine origin such as driftwood. Humans have interacted with jet and created carvings since the prehistoric age, with carved objects found in Neolithic caves. Ancient Romans carved the material into beads and bracelets. In the middle ages, powdered jet was thought to have medical properties. Monks of this time period also used jet rosaries. When Queen Victoria of England went into a 40-year period of mourning following the death of her husband, her black jewelry was made out of jet found in deposits in northern England.

Coral:

While an extensive variety of different corals exist, ornamental coral gemstones are carved primarily from black and golden corals. These corals are made up of a material known as conchiolin, much tougher than the calcium carbonate which many other corals are made of. Coral is initially quite dull, but is often polished en cabochon or into beads, which brightens the color of the gem. Coral is also intricately carved into a variety of shapes for both personal adornment and sculptural decoration. Coral was particularly popular in history around the coastal areas where it is found. Found in the Mediterranean of western Europe, red coral was used as ornament in shields, helmets and jewelry. Unfortunately today, coral reefs are under massive threat of extinction due in part to climate change, and sadly, the continued demand for coral used in jewelry and decoration.



Beauty at a Cost

It's hard to argue that crystals and gemstones aren't beautiful. Unfortunately, methods to retrieve crystals and gems, employed throughout the past and into today, can be quite the opposite. There are serious environmental and ethical concerns surrounding the continued harvest of natural crystals and gemstones.

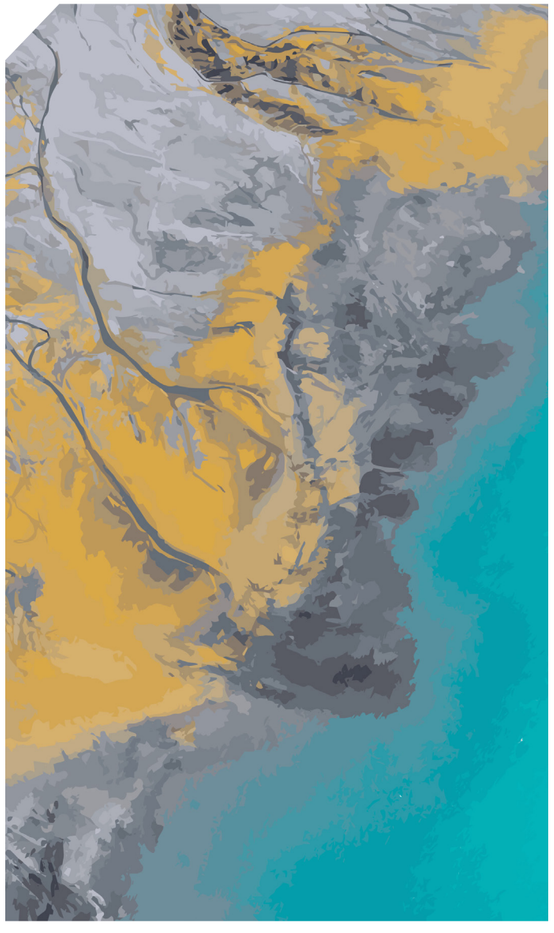
Funding civil wars

Several countries in Africa have been embroiled in civil wars thanks to the diamond trade. Some of these countries include Sierra Leone, Liberia, Angola, the Republic of Congo, and the Democratic Republic of Congo. In these countries, diamonds have been used to fund violent militias. These militias have even involved the use of child soldiers. Diamonds that are sold to profit the turmoil in these countries are commonly referred to as "blood diamonds." The blood diamond trade is so widespread that even the former President of Liberia, Charles Taylor, was brought up on charges of accepting blood diamonds in exchange for weapons traded to violent rebel groups. While many of these wars have fortunately ended, the effects of the massive bloodshed will endure for generations in these areas. All this suffering over some sparkling stones.

Environmental impacts of gemstone mining

Gemstones are usually mined from the earth in two different ways. Diamonds are most commonly mined in large industrial mining operations. Diamond mines are quite visibly disruptive on the environment, cutting large deep craters into the earth. They also heavily pollute local waterways: Most of the rock cut away in large-scale diamond mining is not diamond, but other mineral material. This waste material can contain metals that in large quantities become highly acidic and toxic. Mixed with the water that drains from mining operations, this mixture known as "acid rock drainage" turns local rivers and streams into waste dumps. The acidity of the metal mix drastically alters the PH of the water, disrupting the natural ecosystem of the waterways and killing marine life.

Small-scale mining operations used to collect gemstones like rubies and emeralds have the potential to be mined efficiently and carefully, but frequently environmental considerations are not taken into account. These small mining operations can still disrupt the natural ecosystems around them. Forests are often cleared when digging sites are found to more easily facilitate mines. Gemstones washed in waterways release sedimentary waste which disrupts the ecosystems of the aquatic life. These smaller mines are scattered throughout the world and are harder to regulate due to their independent nature, separate from any large corporation.

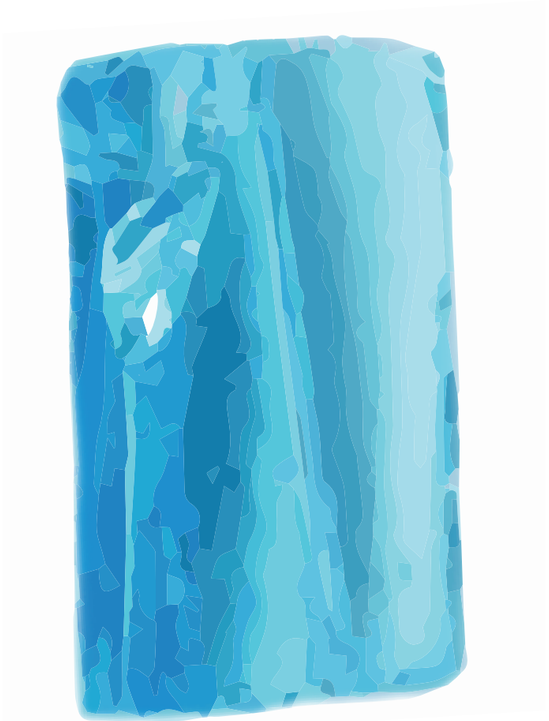


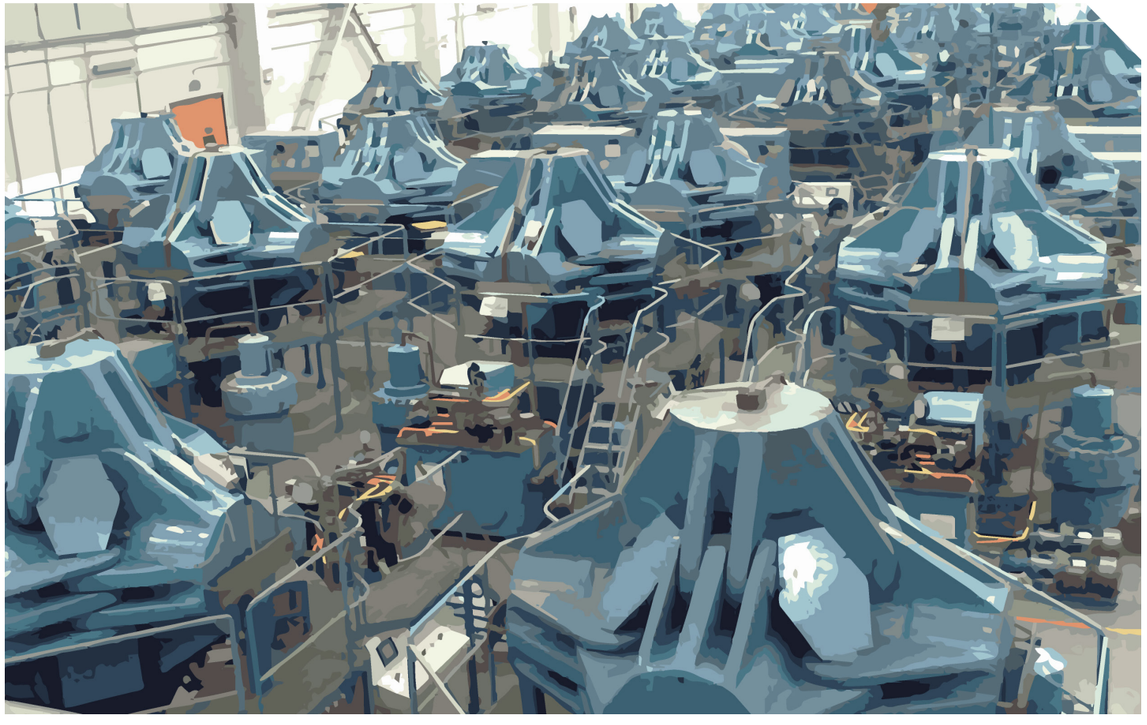
Synthetic gems offer a solution

As bleak as it seems, all of the above doesn't mean you need to toss out any bejeweled item you've ever purchased or been gifted. Modern technology has brought on a solution in the form of synthetic gems. Now, usually the term "synthetic" makes us think of the opposite of ethical and eco-friendly. Earth-wrecking things like plastic clog landfills, and synthetic micro fibers are poisoning marine life. In this case, however, synthetic is a friendly word.

Synthetic gemstones are made in labs and are virtually indistinguishable by the naked eye from their natural counterparts. They are commonly made by melting down certain mineral ingredients and mixing them with colorants. This mineral mixture crystallizes as it cools, controlled by temperature and pressure to form a new gemstone. This process eliminates the risk of mining operations being used to fund civil wars and child armies. Research from Stanford University also shows that synthetic diamond labs can produce less than one-fifth the amount of carbon dioxide emissions compared to a traditional diamond mining operation.

As an added perk, synthetically produced gemstones are usually much cheaper than their mined counterparts, so you can feel good saving both the Earth and your wallet.





Ice, ice, baby

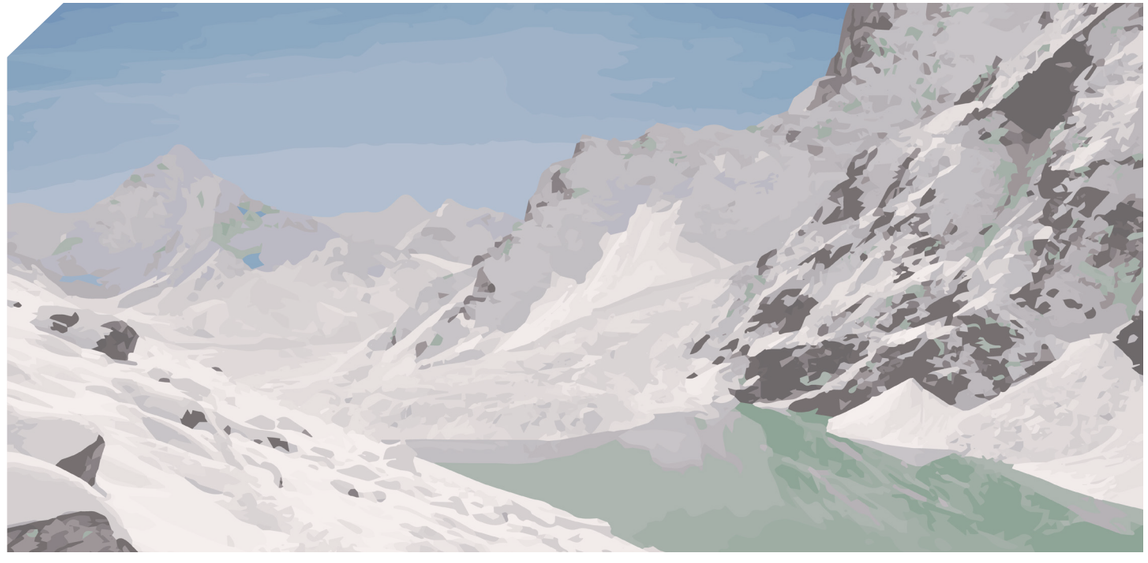
Pop quiz: What's the most abundant mineral exposed on the Earth's surface?

While the image popping into your head may be of some rocky fixture on the side of a mountain, the real answer is surprising. On a planet with a surface covered more than 70 percent in water, the most abundant mineral on the surface actually turns out to be ice. Ice exists on the surface of our planet in glaciers, permafrost (ground that stays frozen all year) and icebergs floating in the ocean. Seasonal snowfall and the freezing over of lakes, rivers and ponds also constitutes the world's makeup of ice.

While hard to believe at first, when you look at the structural makeup of ice, its mineral status begins to make a lot more sense. When water freezes, it does so in a crystalline form. Ice has varying crystalline forms which form under different conditions of temperature and pressure. These different crystal forms create different hardness levels of ice, and some ice is as hard as, if not harder than other rocks. When ice sheets form, they often start off as light, fluffy snow, which over time accumulates and becomes compacted down. As ice becomes compacted, it can recrystallize, creating incredibly dense ice.

The homemade ice you can grab from your refrigerator door or in bags at the local gas station doesn't count as mineral ice, thanks to its man-made nature. However, homemade ice is a relatively new concept in the history of humankind. Back in the day, ice harvesting was a full-blown industry. Large sheets of ice would be harvested from the tops of lakes and stored in insulated "ice houses." As you may expect, ice crops had a hard time making it through the summer. When modern refrigeration came around, ice harvesting became a thing of the past.

Unfortunately, unless you live in the arctic, your dreams of getting blinged out with ice are going to melt pretty quickly. However, there are other ways to really experience ice. Ice hotels are structures built almost entirely out of ice. Most commonly found in the northernmost areas of the world like Scandinavia and Canada, these attractions boast luxury accommodations in frozen water. There is one caveat though: the time of year you visit. Most of the ice hotels, in all their beauty and wonder, can't quite make it through the summer months.



The myth in the mineral

In the ages before science, humanity had its own ideas about where crystals and gems came from. Presented with gorgeous chunks of colorful stone, people couldn't help but to come up with fantastical explanations for these fantastic minerals. From the ancient Greeks to the not-so-ancient people of medieval times, here are some of our favorite stories.

Amethyst:

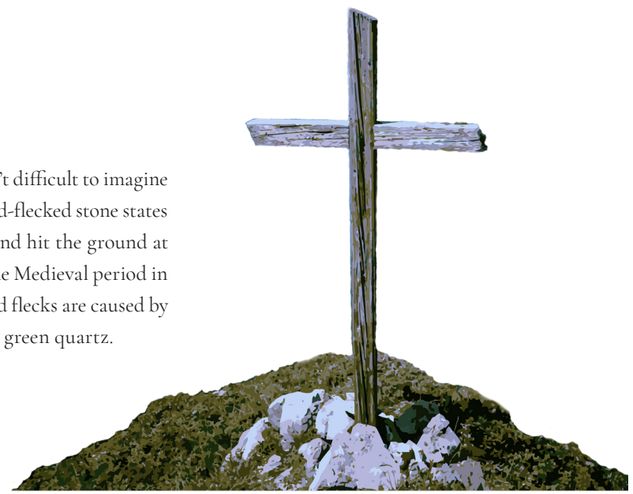
Is there anything the Greeks love more than a tragedy? According to ancient Greek legend, this violet stone had violent beginnings. Dionysus, Greek god of fruitfulness and wine, became jealous of a young woman named Amethyst who preferred to worship the goddess Diana. Dionysus ordered two vicious tigers to devour Amethyst, but Diana, goddess of the moon, the hunt and nature, transformed Amethyst into white quartz. Dionysus became fraught with guilt, and he wept into his goblet of red wine. Wine spilled from his goblet onto the white quartz, giving it the purple hue we recognize Amethyst to have today.

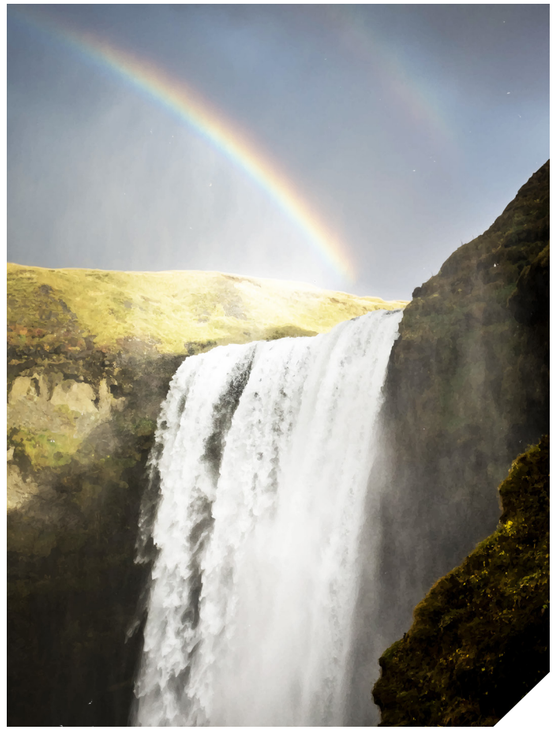
Amber:

Today we know Amber to be fossilized tree resin, and in a way the ancient Greek myth surrounding the creation of Amber comes close to this realization. According to the Greeks, one of Zeus's sons, Phaethon, drove his father's sun chariot too close to earth, and he set the earth alight. Angered by his son's negligence, Zeus murdered Phaethon with a lightning bolt. Nymphs on earth found Phaethon's body and buried him, but his sisters, the Heliades, found his burial site. They were so distraught they wept all day and all night, never leaving his side. As their bodies wasted away into the earth, they transformed into trees, with their tears becoming hardened drops of Amber.

Bloodstone:

Reading the myth surrounding the creation of bloodstone, it isn't difficult to imagine how it got the name. Legend surrounding the creation of this red-flecked stone states that the stone was created when drops of Christ's blood fell and hit the ground at his crucifixion. As a result, bloodstone was used throughout the Medieval period in sculptures representing Christian martyrdom. In reality, the red flecks are caused by traces of a red stone called jasper, dotted throughout the dark green quartz.





Opal:

Australia's national gemstone has a mythology rooted in the beliefs of people who lived on the continent far before the arrival of European settlers. According to aboriginal mythology, the earth was created during something called "Dreamtime." In the Dreamtime, the creator came to earth on a rainbow with a message of peace for humans. Where his foot touched the ground, the rock there turned to opals, sparkling with the colors of the rainbow he had arrived on.

Diamonds:

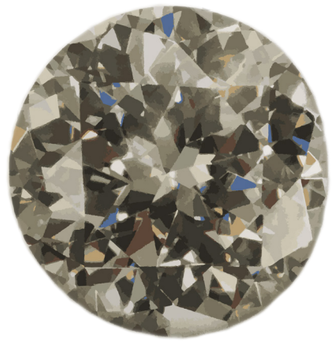
Perhaps the Greeks loved a good cry, because diamonds are yet another gemstone with a tearful creation story. The ancient Greeks believed that diamonds were the fallen tears of the gods. Classical Greek philosopher Plato even believed that diamonds themselves were tiny living creatures containing celestial spirits. The Romans had other ideas, instead believing that diamonds were splinters broken away from falling stars.

Quarterly Birthstones

Long before the resurgence of the new-age, gems associated with birth months have been a widely accepted and ordinary part of western life. Stop any woman on the street and she may not be able to tell you what crystal works best with her energy, but she could probably tell you what her birthstone is. Take a trip to the local jewelry counter and you'll find glass cases separated out by color of stone. From necklaces to bracelets to high school class rings, certain gemstones have their claim to fame all thanks to the month they were assigned to in history.

Speaking of history, the phenomenon of birthstones has a pretty interesting beginning. The book of Exodus in the Bible contains a reference to a sacred object known as the "Breastplate of Aaron." The breastplate was said to have been worn by a High Priest to communicate with God and contained twelve different gemstones. Throughout history, from the ancient Romans to Medieval times, scholars studied the bible to determine which gemstones were found on the breastplate. In the 17th century, it became a practice to wear a gemstone attributed to a birth month, rather than trying to accomplish the great financial feat of owning them all. There is no consensus to this day about the exact gems found on the biblical object, but in 1912 the American National Jeweler's Association created their own birthstone list. Amendments have been made to this original list throughout the 20th and 21st centuries, and now certain months have more than one birth stone.

April: Diamond



Some believe this gemstone to offer special luck in relationships when worn by individuals who were born in April. Read more about diamonds on page 9.

May: Emerald

Famed throughout ancient history, this green gem is the choice for those born in May. You can learn more about emeralds on page 12.

June: Pearl, Alexandrite & Moonstone

People with June birthdays are left spoilt for choice, with three gemstone options to pick from. Read more about Pearl on page 21 and Moonstone on page 19.

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Nature Guide: Gems - Smithsonian
Rock and Gem - Smithsonian
Gem, The Definitive Visual Guide - Smithsonian
https://geology.com/gemstones/gems-from-space/
https://geology.com/meteorites/impactites.shtml
https://blog.nationalgeographic.org/2012/01/12/conservation-gemstones-beyond-fair-trade/
http://www.elleuk.com/fashion/longform/a40040/sourcing-ethical-jewellery/
https://www.theguardian.com/sustainable-business/diamonds-conflict-mines-environment-jewelry
https://www.brilliantearth.com/conflict-diamond-trade/
https://www.wmagazine.com/story/crystals-go-mainstream-behind-the-crystal-healing-obsession
http://metro.co.uk/2018/01/19/crystal-combing-newest-method-self-care-hair-7236217/
https://psmag.com/news/why-are-young-people-so-into-healing-crystals
https://www.thoughtco.com/top-healing-gemstones-1729395
http://www.elle.com/beauty/makeup-skin-care/news/g26430/beauty-products-with-healing-crystals-gems/


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